DZero's Trigger Transformation Tool - Request.
(Hyperlinks are clickable).

Input: A given specific trigger list already existing in the trigger database.

Transformations Related to L3.

The example below is shown on a trigg. list containing 1 trigger: MM1_TMM_IMP_2IPV / 7

Comment: Note that L3 tool terms can call L3 tool terms.
Example: Tool Term: PhTrk05 / 2 calls Tool Term: GlobalTracker / 5
Note that L3 filter terms can call L3 tool terms.
Example: Filter Term: L3FTrack(PhTrk05,2,0.5,1.,10,0) / 2 calls Tool Term: PhTrk05 / 2
Note that L3 filter terms can call L3 filter terms.
Example: Filter Term: L3FInvMass(PhTrk05,.98,1.08,.494,.494,TRUE) / 2 calls Filter Term: L3FTrack(PhTrk05,2,0.5,1.,10,0) / 2
New Note that L3 tool terms do not call L3 filter terms but there is nothing that would prevent this. Therefore do not assume this as a rule.
New Note that L3 scripts do call L3 filter terms and in one case SRTOOLS_ONLINE / 5 do call L3 tool terms. Therefore do not assume that L3 scripts do not call L3 tool terms.

Definition: There are special filter terms, which are not part of any other filter terms, rather, they are the building blocks of L3 scripts. I call these filter terms **ScriptFilterTerm (SFT)**. This is an auxiliary notation, not anything official.
Example: Filter Term: L3FInvMass(PhTrk05,.98,1.08,.494,.494,TRUE) / 2 is a SFT but Filter Term: L3FTrack(PhTrk05,2,0.5,1.,10,0) / 2 is NOT.
New Note that if a FT is an SFT for one trigger, might not be an SFT for another trigger in the same trigger list.

Case 1: Replacing a L3 tool term A with a L3 tool term B.

Example: Replace Tool Term: CFTUnp / 4 with a hypothetical L3 tool term Tool Term: New_CFTUnp / 1

Goal 1: In a given trigger list (TL), find every L3 tool term (TT), L3 filter term (FT), L3 script (SC) and every trigger (TR) in which L3 tool term A has been used, replace L3 tool term A with L3 tool term B and produce the modified L3 tool terms (TT'), L3 filter terms (FT'), L3 scripts (SC'), triggers (TR') and trigger list (TL').

Step 1A) Input: L3 tool term A (old, the one to be replaced).
Ex: Tool Term: CFTUnp / 4
Input: L3 tool term B (new, the one to appear).
Ex: Tool Term: New_CFTUnp / 1

Action a): Find and show all L3 Tool Terms and L3 Filter Terms in which L3 tool term A is used as an immediate building block.
Ex: Tool Term: GlobalTracker / 5 is the only L3 tool term in which Tool Term: CFTUnp / 4 is used as an immediate building block.
Action b): Propose and show TT' and FT', in which L3 tool term A has been replaced by L3 tool term B. When producing the proposed list of TT' and FT', keep the name of TT, increase

the version of TT by one and keep the description of TT. Let the Trigger Meister to decide if he wants to change the name, version or description of TT' and FT'.

Ex: Propose Tool Term: GlobalTracker / 6 in which CFTUnp/4 has been changed for New_CFTunp / 1 but has the old description: Global Tracking tool using SMT and CFT information.

New **Action c):** When producing the TT' and FT', check for the existence of such tools and filter in the database. If they exist, list them as the proposed TT' and FT'.

Action d): Remember for your bookkeeping if FT currently in business is an SFT.

Step 1B) Input: output of step 1A, in other words the inputs are TT' and FT'

Ex: Tool Term: GlobalTracker / 6

Action a): repeat actions listed in Step 1A)

Ex: Tool Term: PhTrk05 / 2 , Tool Term: PrVTX_Z_TRK / 4 , Tool Term: XYVtx05_Z1_beam / 2 , Tool Term: IPTracker / 4 were such, where Tool Term: GlobalTracker / 5 has been used as an immediate building block. Propose and check for existence of tool Term: PhTrk05 / 3, Tool Term: PrVTX_Z_TRK / 5, Tool Term: XYVtx05_Z1_beam / 3 and Tool Term: IPTracker / 5 in which now Tool Term: GlobalTracker / 5 has been replaced by Tool Term: GlobalTracker / 6.

Action b): If not all SFTs has been replaced yet, go to Step 1B). Otherwise done with the replacement of L3 tool terms and L3 filter terms.

Ex: Done when ScriptFilterTerms: Filter Term: L3FMuon(Muon,…) / 1, Filter Term: L3FInvMass … / 2, Filter Term: L3FCFTVertex… / 2, Filter Term: L3FIP… / 3, Filter Term: L3FMuon(MUON, …) / 2 have been replaced by their new forms.

Step 1C) Find all L3 scripts which use the old ScriptFilterTerm (SFT) and propose and show SC' in which L3 SFT has been replaced by the new SFT'. When producing the proposed SC', keep the name of SC, increase the version of SC by one and keep the description of SC. Let the Trigger Meister to decide if he wants to change the name, version or description of SC'.

Ex: Find Level 3 Script Name/Version: Muon… / 1 in which old SFT L3FMuon(Muon,…) / 1, L3FInvMass … / 2, L3FCFTVertex… / 2, L3FIP… / 3, L3FMuon(MUON, …) / 2 terms have been used and create a new Muon… / 2 script.

Step 1D) Find all triggers that used old L3 script SC and propose and show TR' in which L3 SC has been replaced by new SC'. When producing the proposed TR', keep the name of TR, increase the version of TR by one and keep the description of TR. Let the Trigger Meister to decide if he wants to change the name, version or description of TR'.

Ex: Find MM1_TMM_IMP_2IPV / 7 in which L3 script Muon… / 1 is used and propose MM1_TMM_IMP_2IPV / 8 in which Muon… / 2 script is used.

Step 1E) Propose a new trigger list TL' in which all TR have been replaced by TR'. Keep the name of TL, increase the version by 0.01 and keep the description of TL. Let the Trigger Meister to decide if he wants to change the name, version or description of TL'.

Case 1A: Deleting triggers containing a L3 tool term A.

Example: Delete all triggers containing a faulty Tool Term: CFTUnp / 4

Goal 1A: In a given trigger list (TL), find every trigger (TR) in which L3 tool term A has been used, delete these TR and produce the modified trigger list (TL').

Actions: Modify actions of Case1 to achieve this goal.

New **Note:** When the implementer does Case 1, it might be the natural time to implement Case1A as well. If however, it turns out to be too time consuming, it can be done later.

Case 2: Replacing a L3 filter term A with a L3 filter term B.

Example: Replace Filter Term: L3FTrack(PhTrk05,2,0.5,1.,10,0) / 2 with a hypothetical L3 Filter Term: New_L3FTrack(PhTrk05,2,0.5,1.,10,0) / 1

New Note: Since there is nothing to prevent a L3 tool term to call a L3 filter term, the filter terms and tool terms are on the same footage, so this Case 2 is in fact, in principal, identical to Case 1.

Goal 2: In a given trigger list (TL), find every L3 filter term(FT), L3 script (SC) and every trigger (TR) in which L3 filter term A has been used, replace L3 filter term A with L3 filter term B and produce the modified L3 filter terms (FT'), L3 scripts (SC'), triggers (TR') & trigger list (TL').

Action: Follow Step 1A) of Case 1.

Example: Find Filter Term: L3FInvMass(PhTrk05,.98,1.08,.494,.494,TRUE) / 2 and propose Filter Term: L3FInvMass(PhTrk05,.98,1.08,.494,.494,TRUE) / 3 in which New_L3FTrack(PhTrk05,2,0.5,1.,10,0) / 1 will be used.

Case 2A: Deleting triggers containing a L3 filter term A.

Example: Delete all triggers containing a faulty Filter Term: L3FTrack(PhTrk05,2,0.5,1.,10,0) / 2

Goal 1A: In a given trigger list (TL), find every trigger (TR) in which L3 filter term A has been used, delete these TR and produce the modified trigger list (TL').

Action: Modify actions of Case2 to achieve this goal.

New **Note:** When the implementer does Case 1 and Case 2, it might be the natural time to implement Case2A as well. If however, it turns out to be too time consuming, it can be done later.

New Case 2B: Removing a L3 ScriptFilterTerm A.

New Example: Remove a faulty ScriptFilterTerm: L3FInvMass(PhTrk05,.98,1.08,.494,.494,TRUE) / 2

Goal 2B: In a given trigger list (TL), find every L3 script (SC) and every trigger (TR) in which L3 ScriptFilterTerm A has been used, remove L3 ScriptFilterTerm A and produce the modified L3 scripts (SC'), triggers (TR') and trigger list (TL').

Action: Modify actions of Case2 to achieve this goal.

New **Note:** When the implementer does Case 1 and Case 2, it might be the natural time to implement Case2B as well. If however, it turns out to be too time consuming, it can be done later.

New **Note:** This request makes sense if the SFT to be removed is not called by any other FT or TT.

Case 3: Replacing a L3 script A with a L3 script B.

Goal 3: In a given trigger list (TL), find every trigger (TR) in which L3 script A has been used, replace L3 script A with L3 script B and produce the modified trigger (TR') and trigger list (TL').

New **Action:** No action needed. This has been done.

Case 3A: Deleting triggers containing a L3 script A.

New **Action:** No action needed. This has been done.
New **Note:** One can delete all triggers using a L3 script by leaving the field for new script's name blank.

Case 4: Replacing trigger A with a trigger B.

Action: Not needed to be implemented. This is very simple and can be done by hand.

Transformations Related to L2:

Action: Follow what has been said for "Transformations Related to L3".

Note: L2 Tool terms CAN and DO call Filter Terms.

Transformations Related to L1:

For functions below, one can choose the trigger index range (select specific triggers or all triggers).

Case 1: Replacing a L1 neoterm A with a L1 neoterm B.

Ex: Replace neoterm: detector / emcount / 1.00 / CEM(1,12) with neoterm: detector / emcount / 1.00 / CEM(1,15).

Action: No action. Transformations related to L1 are finished.

Note: One can replace any neoterm with any one (or more) neoterms for any set of triggers in an input trigger list (the new neoterms can be from any one version of a neotype).

Case 1A: Deleting triggers containing a L1 neoterm A.

Example: Delete all triggers containing a faulty neoterm: detector / emcount / 1.00 / CEM(1,12)

Action: No action. Transformations related to L1 are finished.

New **Note:** One can delete all triggers using a neoterm by leaving the field for new neoterm's name blank.

Case 1B: Removing a L1 neoterm term A.

Example: Remove a faulty neoterm: detector / emcount / 1.00 / CEM(1,12)

Action: No action. Transformations related to L1 are finished.

Note: One can remove a neoterm from all triggers by typing 'remove' for the new neoterm name.

Case 2: Replacing a L1 script A with a L1 script B.

Action: No action. This has been implemented.